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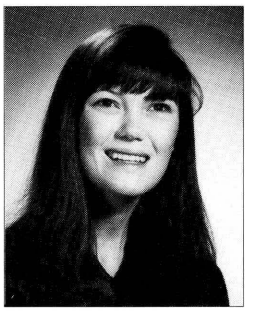

Introduction

The dramatically increasing production of solid waste in the United States has rapidly developed into a heated political issue. In recent years, considerable pressure has been exerted on legislators at all levels of government — municipal, state and federal — to establish policies directed at coping with the difficulties in disposing of the massive flow of solid waste. The United States is confronted by the possibility of 80 percent of the nation's landfills being closed within the next twenty years. In response, legislators have focused on exploring disposal options which will allow the diversion of a significant proportion of solid waste from entering landfill sites.

The ever-shrinking supply of landfill space has created a demand for inexpensive convenient solid waste disposal solutions. Unfortunately, the emphasis placed by Americans on short-term cost and convenience is now, as in the past, resulting in a disregard for long-term cost, environmental soundness and human safety. Even in light of the rapid depletion of landfill space coupled with recent discoveries of widespread corruption and mismanagement in past disposal of waste, Americans continue to accept the most convenient methods of waste disposal. Americans are proving willing to sacrifice responsible long term economical waste management for immediate convenience.

The United States lags conspicuously behind other developed nations, notably those in Western Europe, in its efforts to adopt source reduction and recycling policies. Thus, the energy-saving potential afforded by recycling remains untapped. Seventy-five percent of the solid waste stream is recyclable. By recycling, the disposal of this waste would not only be environmentally sound, but would also conserve energy and curb the rapid depletion of natural resources.

Despite its apparent advantages, recycling has been taken under serious consideration by policy-makers only in the last decade. Both landfills and incinerators could be operated far more safely and effectively if all

recyclables were removed prior to their use. However, even though policy placing recycling at the top of the waste disposal hierarchy appears economically and environmentally advantageous, the development of such policies has been gradual at best.

The transition from careless waste disposal to responsible waste management cannot be effected solely through mandated separation and collection recycling programs. Mandated recycling legislation must be accompanied by appropriate technology, public cooperation and viable secondary markets. In order to overcome its reliance on quick and easy disposal options in favor of recycling, complementary changes must occur in all levels of America's perception of the solid waste issue.

The Throw-Away Mentality

American culture is dominated by a throw-away mentality. The rapid urbanization of American cities produced a marked change in the lifestyle of the majority of Americans. People living in urban areas required packaging designed for preserving food over long stretches of time. One result of this demand for lengthy shelf life has been the ongoing development of increasingly sturdy and complex plastics. Changes in lifestyle, coupled with a widespread transformation of the family structure due to the large-scale introduction of women into the work force, created a rising demand for convenient disposable product packaging. The formation of the throw-away mentality impacted the American people's entire perception of waste disposal.

The influence of the throw-away mentality is visible not only in people's attitudes and life-styles but also in public policy. Formidable institutional barriers stand in the way of large scale recycling. Broad economic conditions, ranging from transportation rates to the tax structure, inadvertently retard the achievement of nationwide recycling. Government subsidies and tax incentives mask the need for less expensive, energy-conserving, waste disposal alternatives. In order for effective recycling to occur on a national scale, the biases built into the system which undermine the need for recycling must be overcome. Successful recycling requires far more than efficient collection and separation; it demands complementary policy initiatives at all levels of government.

Obstacles to Efficient Waste Disposal Management

A common misconception that has hindered the implementation of recycling programs is that they generate profit. Recycling is fundamentally a cost avoidance mechanism. (Pollack, p. 27) Initially, at least, curbside recycling programs cost more to operate than they produce in revenue. However, when recycling is assessed in comparison to alternative methods of waste disposal, it clearly incurs the least cost. A study conducted by Resource Management Associates, a San Francisco consulting firm, determined that curbside recycling costs approximately twenty to thirty dollars a ton. This can be compared to the costs of landfill disposal and incineration, which cost forty to sixty dollars per ton and seventy to one hundred twenty dollars per ton respectively. (Pollack, p. 28)

Furthermore, there is a fundamental lack of incentive to recycle inherent in the American economic structure. Manufacturers are not obliged to produce recyclable products because they are not held directly responsible for the cost of waste management. Consumers are not alert to the advantages of recycling because they are not charged proportionally to the amount that they discard. Another means through which many Americans are able to avoid direct responsibility for their waste is through "waste flight." (*The Solid Waste Dilemma*, February 1989, p. 14) Many communities and states choose to ship their waste across state and even national boundaries. Their ability to completely remove waste from the local generation site lowers their incentive to build recycling facilities that will manage waste in the immediate vicinity. Therefore, recycling facilities, like most disposal facilities, are difficult to site. When given the choice, most Americans have demonstrated a reluctance to take direct responsibility for proper solid waste management.

The Market Viability of Recycling

Difficulties also continue to thwart even successfully managed recycling programs. A product cannot be considered completely recycled until it is processed and re-enters the market. Not only must an effective method of collection and separation be established, but dependable markets must also be available to absorb recycled products back into the economic system. The reintroduction of a recycled product into the market is a difficult process. The market for recycled goods is typically disorganized and volatile. Furthermore, various economic policies adopted by the federal government have decreased the competitiveness of recycled goods.

One obstacle to the viability of secondary goods in the market is the cost of transportation. Up until 1980, discrimination against secondary materials was built into railroad rates. Shipping secondary goods within a two-to-four hundred mile radius commonly used up 80 percent of the gross income from the sale. The inflated railroad rates crippled the sales of such secondary goods as iron, steel, paper, and refuse-derived fuel. In 1980 the Interstate Commerce Commission (ICC) was directed to investigate this apparent rate discrimination. The result of the investigation was the Staggers Railroad Act, which established a cap on the rates for shipping secondary materials with the exception of steel and iron. This cap enabled secondary products to become competitive on the industrial market. Until the act was passed, however, railroad rates prevented most secondary goods from ever reaching markets outside of their close vicinity. Consequently, the development of a national or even inter-state secondary goods markets was severely constrained. (Bruno, p. 10)

The market for secondary goods has been further plagued by uncertain market stability and demand. There is no way for the manufacturer of recyclables to hedge against a not-uncommon failure in the secondary materials market. The secondary materials market has no stable floor price, nor do sellers have enough storage space to maintain price-stabilizing buffer stocks. (Pollack, p. 29) The instability of the secondary market is aggravated by the structure of federal tax policy. Tax incentives offered by the federal government have distorted the real cost of recycling in comparison to virgin materials. Currently, the tax structure provides extractive industries with a depletion allowance according to which extractive mining companies are granted a percentage reduction in taxable income. The depletion allowance is intended to partially compensate the companies for the depletion of their assets. (Bruno, p. 13) The extractive industry justifies this tax benefit by emphasizing the high-risk capital-intensive nature of mining. The tax advantages allotted to the extractive industry thus give virgin materials a distinct advantage over their recycled counterparts. The effect of the tax policy is to encourage increased exploitation of natural resources at the expense of less-expensive energy-conserving alternatives.

The timber industry also enjoys favorable treatment under current tax law. The federal government has historically sought to encourage investment in the timber industry. Tax deductions are offered in order to offset the depletion of timber supplies and encourage planting, harvesting and marketing. Through the tax structure, the federal government thus subsidizes the exploitation of forest lands. As a result, secondary pulp is relatively more expensive than it would otherwise be. (Bruno, p. 17)

The Integrated Systems Approach to Waste Management

The Environmental Protection Agency has recently made significant attempts to remedy the institutional discrimination confronting large scale recycling programs. The objectives outlined by the EPA for improving solid waste management include investigating the various obstacles faced by recycling programs. The EPA's research efforts focus primarily on possible changes in product packaging, better methods of collection and separation and the economic incentives and disincentives affecting recycling. The EPA proposes to tackle these problems through an integrated systems approach to solid waste management. (*The Solid Waste Dilemma*, February 1989, p. 16)

The integrated systems approach reflects the EPA's acknowledgement that in order for

recycling to minimize the solid waste going to landfills, all three levels of government must be involved and working in cooperation. The integrated systems approach is designed to overcome institutional barriers to recycling by encouraging complementary changes at all levels of government. The approach establishes a hierarchy of disposal techniques, which reverses the trend created by the throw-away mentality by establishing recycling as the best possible means of waste disposal. The approach does not, however, eliminate the use of incinerators and landfills. Instead, it seeks the most efficient combined use of all three options. Furthermore, the EPA acknowledges that the high emphasis placed on recycling will require substantial changes in the solid waste management ethic. It contends that changes must occur in both the manufacturer's concept of product packaging and the consumer's awareness of appropriate product disposal.

In order to initiate this change, the EPA is pursuing a set of objectives aimed at targeting appropriate information at each of the parties considered necessary to successful recycling. The EPA is directing a substantial amount of energy towards educating government officials. It is also seeking to develop communication ties among federal, state and local officials and also between them and members of industry. The information provided by the EPA ranges from practical knowledge on how to manage and market secondary goods to economic information concerning market trends regarding volume and types of solid waste. This information is disseminated through national and regional planning councils as well as through workshops for manufacturers and educators on new product and packaging design. The EPA further plans to increase research on potential economic incentives and existing disincentives to recycling. One EPA proposal for addressing instability in the secondary markets is the formation of regional market councils and a national recycling council which will circulate and exchange market information.

In January 1988, the EPA announced as a national goal the disposal of 25 percent of solid waste through source reduction and recycling. (*The Solid Waste Dilemma*, February 1989, p. 22) The Solid Waste Management Task Force was organized the same year to develop specific strategies for meeting the EPA's goal. The task force placed special emphasis on yard composting. Yard waste, which comprises 18 percent of all solid waste, was targeted because it takes up a high percentage of landfill space and is readily recyclable. Another waste product given special focus was lead-acid batteries. These batteries contain cadium, which poses a serious health risk when disposed of in an incinerator.

The Role of Congress in Solid Waste Disposal

Despite the EPA's goal to establish an integrated systems approach, it lacks the enforcement power necessary to implement this approach. Rather the creation of recycling policies and their enforcement is chiefly the responsibility of the states and localities; and the willingness of the states and localities to implement an integrated systems approach is in turn highly dependent on another branch of the federal government, Congress.

There are significant federally maintained institutional barriers to the success of the integrated systems approach. Prominent among these barriers are transportation and taxes. As already noted, the Staggers Act provides favorable treatment to some secondary goods, but leaves two major secondary products, steel and iron, outside of its jurisdiction. Furthermore, the tax incentives granted to the extractive industries and the timber industry, even after being acknowledged by Congress to have an adverse effect on the competitiveness of secondary goods, have remained largely unchanged. The primary reason for the failure of Congress to address this problem lies in the lobbying power of the virgin materials industries. In 1982 Congress passed the Tax Equity and Fiscal Responsibility Act, which lowered depletion allowances. The act was later repealed under pressure from the extractive industry. (Bruno, p. 14) Alternative proposals have subsequently been suggested for enabling secondary goods to receive treatment comparable to that given virgin materials in the market. Congress has given consideration to

extending depletion allowances to secondary materials. It has proved very difficult, however, for secondary goods manufacturers to combat the powerful interests which protect the exclusive receipt of depletion allowances by natural resource industries.

Congress has, however, recently demonstrated an increasing interest in addressing the municipal solid waste problem. In the past, Congress had channeled most of its concern towards solid waste into policies regulating hazardous waste. In the past two years, though, it has shown signs of reversing its passive stance. In July 1989, two measures urging further consideration of recycling were introduced. The Solid Waste Disposal Act and the Waste Minimization and Control Act proposed a ban on the disposal of lead-acid and mercury batteries in landfills, a prohibition that would force the implementation of a recycling alternative for these items. (Hanson, p. 23)

Further progress was made in November 1989, when Congress commissioned the Office of Technology Assessment (OTA) to examine the role of the federal government in recycling. OTA responded by targeting two areas where federal involvement would be fruitful. It recommended first that Congress examine the problem of interstate transportation of trash and the difficulty of siting resource recovery facilities. OTA also advised that Congress develop guidelines for waste disposal and outline the relative risks, costs and benefits of each method. (Ember, p. 12)

Legislation specifically addressing the creation and maintenance of secondary markets is currently pending. Proposed in July, 1990, by Representative Gerry Sikorski of Minnesota, the measure (H.R. 4942) focuses on the need for stable secondary markets. One option being discussed is a mandated procurement policy in the federal government. (Kocheisen, p. 10) A mandated procurement policy would have the effect of stimulating the secondary goods markets.

Although most of Congress' efforts to address the solid waste issue are still only at the discussion stage, it is evident that it has acknowledged that the federal government ought to play a role in facilitating the widespread use of recycling as a disposal option. Congress is steadily moving away from the detached stance it had long assumed. Gradually rejecting the notion that the federal government has no role in the management of municipal solid waste, Congress is beginning to recognize its responsibility to help guide and coordinate recycling policies.

Mandated Recycling Laws

Even with Congress playing a more active role, the primary responsibility of solid waste management lies with the states and localities. The role of the federal government is currently limited to establishing broad policy directions, tax structure and interstate commerce policy; but it is the responsibility of the states to implement solid waste laws and provide the enforcement measures necessary to render the policies effectual.

A number of states, particularly those which have experienced crises in solid waste disposal, have recently mandated recycling programs. At the time of this writing, there are seven states with mandated recycling laws: Rhode Island, New Jersey, Pennsylvania, Florida, Maryland, Oregon and California. Florida provides an example of very rigorous recycling legislation. It has mandated that 30 percent of the waste stream must be recycled by 1994. An illustration of a less stringent policy is Pennsylvania's requirement that all communities with more than five thousand inhabitants must have mandated programs which recycle at least 25 percent of their solid waste by 1997.

It is not enough, however, for a state to mandate the separation and collection of recyclables. A state which mandates recycling faces the challenge of quelling public resistance to it. The state must educate the public not only on the benefits of recycling, but also on the tax dollars that will be saved by not using more landfill space. Furthermore, the state must determine how to enforce the legislation. The Florida recycling law includes a provision for ensuring compliance by its municipalities. Any community that fails to meet the recycling goal of 30 percent by 1994 will be denied state funding. This strict enforcement plan has been met with dismay by many of

Florida's rural communities. Typifying the resistance is Cirus County. Although having access to ample landfill space, Cirus County is required to spend two million dollars in order to make five hundred thousand dollars and thus comply with the state legislation. The plight of Cirus County raises questions concerning the financial feasibility of mandated recycling in rural communities where landfill space is still ample and inexpensive. (Treadaway, p. 40)

A further obstacle confronting states with mandatory recycling laws is the need for secondary markets that will absorb their recyclables. Each state must address the possibility of a market glut resulting from the legislation. This problem, however, can be solved by careful organization. The risk entailed in financing a resource recovery facility may be dramatically reduced by regional cooperation. In Illinois, which has recently banned yard waste from landfills, municipalities faced a situation where, though not mandated, recycling became a financial necessity. In response, the city of Urbana opened a regional yard-waste reclamation facility. The development of the regional facility lowered the financial risk of all the communities involved. It also prevented competition between communities from developing in the secondary markets. (Dyke, p. 62) Another successful recycling program implemented through cooperative planning occurred in Rhode Island. The first state to mandate recycling, Rhode Island constructed three regional recycling plants and established a centralized solid waste management authority. (Treadaway, p. 40)

One of the greatest potential dangers to state-mandated recycling is the possibility that illegal dumping will result. The previously mentioned Illinois act banning yard waste from landfills provides a good illustration of the consequences of this danger. Following the implementation of the act there was a marked increase in the amount of illegal dumping of yard waste in forest lands. It is, therefore, critical for a state that is mandating recycling to emphasize its convenience and economy.

Fortunately, the feasibility of mandated recycling programs is dramatically increasing. The risk incurred by states and localities that mandate recycling is being reduced by the entrance of the private sector into the recycling market. It is hoped that as more private firms recognize the potential profits of recycling, secondary markets may begin to stabilize and mandatory programs will become viable for more states and especially for more small localities.

Conclusion

Effective recycling clearly requires much more than mandated collection and separation programs. The success of the integrated systems approach proposed by the EPA depends on cooperation among all levels of government. Both Congress and the EPA have invested considerable time and funds into researching the obstacles that have prevented successful recycling in the past. In order for the U.S. to achieve its national goal of disposing of 25 percent of solid waste through recycling, legislation must first be passed addressing these obstacles. The future success of recycling in the U.S. is dependent on the willingness of the federal government to assume a more active role in aiding policies implemented by the states to promote or mandate recycling.

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